

Moreover, it will be apparent to those skilled in the art from this disclosure that additional hole bores 56 and 102 can be provided for additional adjustment. Moreover, the angular spacing of the bores 56 and 102 can be changed as needed and/or desired. In any event, the angular spacing 5 between the bores 56 and the angular spacing between bores 102 are preferably different from each other to provide for a small incremental adjustment of the return spring 99. As seen in FIG. 4, only five of the bores 56 and 102 are illustrated since one of the bores 56 is axially aligned with 10 one of the bores 102.

When the cable disc brake 12a is in the assembled position, the return spring 99 normally biases the input cam 90 and the actuating arm 98 to a brake releasing position. When the rider squeezes the brake lever 21a, the inner wire 25a of the cable 19a moves relative to the outer casing 24a of the cable 19a to cause the actuating arm 98 and the input cam 90 to rotate together. This rotation causes the rolling members 92 to move from the deep ends of the camming slots 90e and 91d to the shallow ends of the camming slots 90e and 91d. As the rolling members 92 move within the camming slots 90e and 91d, the output cam 91 is moved in an axial direction against the biasing force of the output cam return spring 93. This axial movement of the output cam 91 causes the left brake pad 32 to move against the urging force of the pad spring 87 to engage the rotor 20a, which is then pressed against the right brake pad 32. This engagement of the brake pads 32 with the disc brake rotor 20a causes the braking action of the cable disc brake 12a.

Referring now to FIGS. 5, 52 and 53, a cover 100 is 30 located between the actuating arm 98 and the first end 48 of the left caliper portion 38. Preferably, this cover 100 fits on the outer annular end surface 54 of the first end 48 of the left caliper portion 38 so as to seal the space between the actuating arm 98 and the left caliper portion 38. 35

While only selected embodiments have been chosen to illustrate the present invention, it will be apparent to those skilled in the art from this disclosure that various changes and modifications can be made herein without departing from the scope of the invention as defined in the appended 40 claims. Furthermore, the foregoing description of the embodiments according to the present invention are provided for illustration only, and not for the purpose of limiting the invention as defined by the appended claims and their equivalents. 45

What is claimed is:

1. A cable disc brake comprising:
a caliper housing;
a first friction member movably coupled to said caliper 50 housing between a release position and a braking position;
a second friction member coupled to said caliper housing and arranged substantially parallel to said first friction member to form a rotor receiving slot therebetween; 55
and
an actuated mechanism movably coupled to said caliper housing to move said first friction member in an axial direction from said release position towards said second friction member to said braking position, said actuated mechanism including
an input cam movably mounted within said caliper housing to move in a rotational direction about a longitudinal axis, but not in an axial direction, said input cam having a first camming surface with an 60 axially extending guide member non-movably fixed thereto at said longitudinal axis, and

an output cam movably mounted within said caliper housing to move in the axial direction in response to rotation of said input cam, but not in the rotational direction, said output cam having a second camming surface with an axially extending bore, said guide member being at least partially disposed within said bore to ensure smooth relative movement between said input and output cams.

2. A cable disc brake according to claim 1, wherein said guide member is formed by a pin extending from said input cam into said bore of said output cam.
3. A cable disc brake according to claim 2, wherein said pin is integrally formed with said input cam.
4. A cable disc brake according to claim 2, wherein said first camming surface of said input cam has a set of first camming slots, said second camming surface of said output cam has a set of second camming slots with rolling members located between said first and second camming slots.
5. A cable disc brake according to claim 4, wherein said rolling members are balls and said first and second camming slots are circumferentially extending ramp-shaped slots.
6. A cable disc brake according to claim 1, wherein said actuated mechanism further includes an actuating arm operatively coupled to said input cam.
7. A cable disc brake according to claim 6, wherein said actuating arm is biased to a release position by a biasing member.
8. A cable disc brake according to claim 7, wherein said biasing member is a torsion spring with a first end coupled to said caliper housing a second end coupled to said actuating arm.
9. A cable disc brake according to claim 8, wherein said actuated mechanism includes a return spring arranged to bias said first and second cam members together.
10. A cable disc brake according to claim 9, wherein said actuating arm has a cable attachment member thereon.
11. A cable disc brake comprising:
a caliper housing;
a first friction member movably coupled to said caliper housing between a release position and a braking position;
a second friction member coupled to said caliper housing and arranged substantially parallel to said first friction member to form a rotor receiving slot therebetween; and
an actuated mechanism movably coupled to said caliper housing to move said first friction member from said release position towards said second friction member to said braking position, said actuated mechanism having first and second cam members movably arranged between an axially retracted position and an axially extended position with a guide member interconnecting said first and second cam members during movement between said axially retracted position and said axially extended position, said guide member being non-movable in the axial direction relative to said caliper housing,
said first cam member being rotatably mounted within said caliper housing, but non-movably mounted in the axial direction, and said second cam member being movably mounted in the axial direction but non-rotatably mounted.

12. A cable disc brake according to claim 11, wherein said guide member is formed by a pin extending from one of said first and second cam members into a bore of the other of said first and second cam members.

13. A cable disc brake according to claim 12, wherein said pin is located along an axis of rotation of said first and second cam members. 5

14. A cable disc brake according to claim 13, wherein said actuated mechanism further includes an actuating arm coupled to said first cam member. 10

15. A cable disc brake according to claim 14, wherein said actuating arm is biased to a release position by a biasing member.

16. A cable disc brake according to claim 15, wherein said biasing member is a torsion spring with a first end coupled to said caliper housing a second end coupled to said actuating arm. 15

17. A cable disc brake according to claim 16, wherein said actuated mechanism includes a return spring arranged to bias said first and second cam members together. 20

18. A cable disc brake according to claim 17, wherein said actuating arm has a cable attachment member thereon. 25

19. A cable disc brake according to claim 11, wherein said first cam member has a set of first camming surfaces, said second cam member has a set of second camming surfaces with rolling members located between said first and second camming surfaces. 30

20. A cable disc brake according to claim 19, wherein said rolling members are balls and said first and second camming surfaces include ramp-shaped slots.

21. A cable disc brake according to claim 1, wherein said input cam includes a first cam member disposed within an internal bore of said caliper housing. 35

22. A cable disc brake according to claim 21, wherein said input cam further includes an operating shaft that extends axially from said first cam member, and said operating shaft is operatively coupled to an actuating arm. 40

23. A cable disc brake according to claim 22, wherein said operating shaft at least partially extends outwardly from said caliper housing, and said actuating arm is disposed on an opposite side of said caliper housing from said internal bore of said caliper housing. 45

24. A cable disc brake according to claim 22, wherein said input cam further includes a bushing mounted on said operating shaft of said input cam. 50

25. A cable disc brake according to claim 24, wherein

said bushing includes a cylindrical portion at least partially surrounding said operating shaft and a flange portion extending from said cylindrical portion, and said flange portion is located axially between a portion of said input cam and said caliper housing within said internal bore of said caliper housing.

26. A cable disc brake according to claim 21, wherein said output cam includes a second cam member with a non-circular thrust shaft extending axially therefrom, and said thrust shaft is received in a non-circular hole of a rotation stopper.

27. A cable disc brake according to claim 26, wherein said rotation stopper includes a radially extending tab that is received in an axial slot of said caliper housing to prevent rotation of said rotation stopper.

28. A cable disc brake according to claim 27, wherein said rotation stopper is secured on said thrust shaft of said output cam by a retainer.

29. A cable disc brake according to claim 28, wherein said retainer is a c-shaped snap ring that is received in an annular groove of said internal bore of said caliper housing.

30. A cable disc brake according to claim 26, wherein said actuated mechanism includes a return spring disposed between said rotation stopper and a portion of said output cam.

31. A cable disc brake according to claim 16, wherein said torsion spring is adjustably coupled to said caliper housing and said actuating arm to adjust the biasing force of said torsion spring.

32. A cable disc brake according to claim 22, wherein said actuated mechanism includes a cover disposed between said actuating arm and said caliper housing to seal said internal bore of said caliper housing.

33. A cable disc brake according to claim 32, wherein said actuating arm is biased to a release position by a biasing member arranged between said cover and said caliper housing.

34. A cable disc brake according to claim 17, wherein said return spring is a separate member from said biasing member.

35. A cable disc brake according to claim 34, wherein said return spring is located axially on an opposite side of said input and output cams from said biasing member.

36. A cable disc brake according to claim 1, wherein said axially extending bore of said output cam is a blind bore.

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